

## SEQUENCE LISTING

<110> Agency for Science, Technology and Research

<120> Protein Separation Device

<130> 51571-4

<150> US 60/530,608

<151> 2003-12-19

<160> 8

<170> PatentIn version 3.3

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<211> 1647

<212> DNA

<213> Escherichia coli

<220>

<221> misc\_feature

<223> GroEL wildtype DNA sequence

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&lt;213&gt; Escherichia coli

&lt;220&gt;

&lt;221&gt; misc\_feature

&lt;223&gt; GroEL wildtype amino acid sequence

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35 40 45

Ile Thr Lys Asp Gly Val Ser Val Ala Arg Glu Ile Glu Leu Glu Asp  
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Lys Phe Glu Asn Met Gly Ala Gln Met Val Lys Glu Val Ala Ser Lys  
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Ala Asn Asp Ala Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala  
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Gln Ala Ile Ile Thr Glu Gly Leu Lys Ala Val Ala Ala Gly Met Asn  
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Pro Met Asp Leu Lys Arg Gly Ile Asp Lys Ala Val Thr Ala Ala Val  
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180 185 190

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195 200 205

Glu Thr Gly Ala Val Glu Leu Glu Ser Pro Phe Ile Leu Leu Ala Asp  
210 215 220

Lys Lys Ile Ser Asn Ile Arg Glu Met Leu Pro Val Leu Glu Ala Val  
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Ala Lys Ala Gly Lys Pro Leu Leu Ile Ile Ala Glu Asp Val Glu Gly  
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Glu Ala Leu Ala Thr Leu Val Val Asn Thr Met Arg Gly Ile Val Lys  
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Val Ala Ala Val Lys Ala Pro Gly Phe Gly Asp Arg Arg Lys Ala Met  
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 325 330 335  
 Gly Glu Glu Ala Ala Ile Gln Gly Arg Val Ala Gln Ile Arg Gln Gln  
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 Ile Glu Glu Ala Thr Ser Asp Tyr Asp Arg Glu Lys Leu Gln Glu Arg  
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 450 455 460  
 Val Ala Asn Thr Val Lys Gly Gly Asp Gly Asn Tyr Gly Tyr Asn Ala  
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 Ala Thr Glu Glu Tyr Gly Asn Met Ile Asp Met Gly Ile Leu Asp Pro  
 485 490 495  
 Thr Lys Val Thr Arg Ser Ala Leu Gln Tyr Ala Ala Ser Val Ala Gly  
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 Leu Met Ile Thr Thr Glu Cys Met Val Thr Asp Leu Pro Lys Asn Asp  
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&lt;211&gt; 1647

&lt;212&gt; DNA

&lt;213&gt; Escherichia coli

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 <223> GroEL-Asp490Cys DNA sequence

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 <222> (1468)..(1470)  
 <223> GAC to TCG

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 <212> PRT  
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<220>  
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 <223> D to C

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 Ile Thr Lys Asp Gly Val Ser Val Ala Arg Glu Ile Glu Leu Glu Asp  
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 Lys Phe Glu Asn Met Gly Ala Gln Met Val Lys Glu Val Ala Ser Lys  
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 Ala Asn Asp Ala Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala  
 85 90 95  
 Gln Ala Ile Ile Thr Glu Gly Leu Lys Ala Val Ala Ala Gly Met Asn  
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 Pro Met Asp Leu Lys Arg Gly Ile Asp Lys Ala Val Thr Ala Ala Val  
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 Ala Lys Ala Gly Lys Pro Leu Leu Ile Ile Ala Glu Asp Val Glu Gly  
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 Glu Ala Leu Ala Thr Leu Val Val Asn Thr Met Arg Gly Ile Val Lys  
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Ala Pro Leu Arg Gln Ile Val Leu Asn Cys Gly Glu Glu Pro Ser Val
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Ala Thr Glu Glu Tyr Gly Asn Met Ile Cys Met Gly Ile Leu Asp Pro
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<213> Escherichia coli

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<223> GroEL apical domain RYD modification DNA sequence

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<222> (598)..(606)
<223> CTGTCTCCT to CGTTATGAT

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<222> (1468)..(1470)
<223> GAC to TGC

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<210> 6
<211> 548
<212> PRT
<213> Escherichia coli

<220>
<221> misc_feature
<223> GroEL apical domain RYD modification

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<222> (200)..(202)
<223> LSP to RYD

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<223> D to C

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Pro Lys Gly Arg Asn Val Val Leu Asp Lys Ser Phe Gly Ala Pro Thr
          35          40          45

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 Lys Phe Glu Asn Met Gly Ala Gln Met Val Lys Glu Val Ala Ser Lys  
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 Ala Asn Asp Ala Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala  
 85 90 95  
 Gln Ala Ile Ile Thr Glu Gly Leu Lys Ala Val Ala Ala Gly Met Asn  
 100 105 110  
 Pro Met Asp Leu Lys Arg Gly Ile Asp Lys Ala Val Thr Val Ala Val  
 115 120 125  
 Glu Glu Leu Lys Ala Leu Ser Val Pro Cys Ser Asp Ser Lys Ala Ile  
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 Ala Gln Val Gly Thr Ile Ser Ala Asn Ser Asp Glu Thr Val Gly Lys  
 145 150 155 160  
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 Val Glu Asp Gly Thr Gly Leu Gln Asp Glu Leu Asp Val Val Glu Gly  
 180 185 190  
 Met Gln Phe Asp Arg Gly Tyr Arg Tyr Asp Tyr Phe Ile Asn Lys Pro  
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 Glu Thr Gly Ala Val Glu Leu Glu Ser Pro Phe Ile Leu Leu Ala Asp  
 210 215 220  
 Lys Lys Ile Ser Asn Ile Arg Glu Met Leu Pro Val Leu Glu Ala Val  
 225 230 235 240  
 Ala Lys Ala Gly Lys Pro Leu Leu Ile Ile Ala Glu Asp Val Glu Gly  
 245 250 255  
 Glu Ala Leu Ala Thr Leu Val Val Asn Thr Met Arg Gly Ile Val Lys  
 260 265 270  
 Val Ala Ala Val Lys Ala Pro Gly Phe Gly Asp Arg Arg Lys Ala Met  
 275 280 285  
 Leu Gln Asp Ile Ala Thr Leu Thr Gly Gly Thr Val Ile Ser Glu Glu  
 290 295 300  
 Ile Gly Met Glu Leu Glu Lys Ala Thr Leu Glu Asp Leu Gly Gln Ala  
 305 310 315 320  
 Lys Arg Val Val Ile Asn Lys Asp Thr Thr Thr Ile Ile Asp Gly Val  
 325 330 335  
 Gly Glu Glu Ala Ala Ile Gln Gly Arg Val Ala Gln Ile Arg Gln Gln  
 340 345 350  
 Ile Glu Glu Ala Thr Ser Asp Tyr Asp Arg Glu Lys Leu Gln Glu Arg  
 355 360 365



Val Ala Lys Leu Ala Gly Gly Val Ala Val Ile Lys Val Gly Ala Ala  
 370 375 380  
 Thr Glu Val Glu Met Lys Glu Lys Lys Ala Arg Val Glu Asp Ala Leu  
 385 390 395 400  
 His Ala Thr Arg Ala Ala Val Glu Glu Gly Val Val Ala Gly Gly Gly  
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 Val Ala Leu Ile Arg Val Ala Ser Lys Leu Ala Asp Leu Arg Gly Gln  
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 Val Ala Asn Thr Val Lys Gly Gly Asp Gly Asn Tyr Gly Tyr Asn Ala  
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<210> 7  
 <211> 1647  
 <212> DNA  
 <213> Escherichia coli

<220>  
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 <223> TAC to ATC

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 <223> GTTGTT to CTTTTC

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 Ile Thr Lys Asp Gly Val Ser Val Ala Arg Glu Ile Glu Leu Glu Asp  
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 Lys Phe Glu Asn Met Gly Ala Gln Met Val Lys Glu Val Ala Ser Lys  
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 Ala Asn Asp Ala Ala Gly Asp Gly Thr Thr Thr Ala Thr Val Leu Ala  
 85 90 95

Gln Ala Ile Ile Thr Glu Gly Leu Lys Ala Val Ala Ala Gly Met Asn  
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 Pro Met Asp Leu Lys Arg Gly Ile Asp Lys Ala Val Thr Ala Ala Val  
 115 120 125  
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 Met Gln Phe Asp Arg Gly Ile Leu Ser Pro Ile Phe Ile Asn Lys Pro  
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 Glu Thr Gly Ala Val Glu Leu Glu Ser Pro Phe Ile Leu Leu Ala Asp  
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 Lys Lys Ile Ser Asn Ile Arg Glu Met Ile Pro Val Ile Glu Ala Val  
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 260 265 270  
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 Ile Gly Met Glu Leu Glu Lys Ala Thr Leu Glu Asp Leu Gly Gln Ala  
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 Lys Arg Val Val Ile Asn Lys Asp Thr Thr Thr Ile Ile Asp Gly Val  
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 Gly Glu Glu Ala Ala Ile Gln Gly Arg Val Ala Gln Ile Arg Gln Gln  
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 His Ala Thr Arg Ala Ala Val Glu Glu Gly Val Val Ala Gly Gly Gly  
 405 410 415

Val Ala Leu Ile Arg Val Ala Ser Lys Leu Ala Asp Leu Arg Gly Gln  
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Asn Glu Asp Gln Asn Val Gly Ile Lys Val Ala Leu Arg Ala Met Glu  
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Ala Pro Leu Arg Gln Ile Val Leu Asn Cys Gly Glu Glu Pro Ser Val  
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Val Ala Asn Thr Val Lys Gly Gly Asp Gly Asn Tyr Gly Tyr Asn Ala  
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Ala Thr Glu Glu Tyr Gly Asn Met Ile Cys Met Gly Ile Leu Asp Pro  
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Thr Lys Val Thr Arg Ser Ala Leu Gln Tyr Ala Ala Ser Val Ala Gly  
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Gly Gly Met Met  
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